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Current Support Brief

COMMUNIST CHINA'S CAPABILITY TO PRODUCE AIRCRAFT FUELS

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COMMUNIST CHINA'S CAPABILITY TO PRODUCE AIRCRAFT FUELS

Communist China imported about 1.9 million metric tons (mt) of petroleum products from other countries of the Bloc, principally the USSR, in 1962 (see the table). These imports represented a decline of about 40 percent from the 3.2 million mt of products imported in 1961. In spite of the marked decrease in total petroleum imports in 1962, there was no decrease from the level of 1961 in the quantity of aircraft fuels imported. China continued to remain entirely dependent on imports for its supply of aircraft fuels and lubricants. This continuing dependence on imports for such important military end items as aircraft fuels has posed questions and speculation on China's capability to produce such items from domestic resources.

1. Aviation Gasoline

Based on available evidence it is estimated that, except for possible production on a pilot-plant scale, Communist China cannot now produce aviation gasoline of the type required for civil and military aircraft. Except for the catalytic cracking unit at the Lan-chou refinery, China has no facilities for the manufacture of high-grade gasoline distillates. There is no evidence that this cracking unit has ever produced high-octane distillates or that China has produced or can produce the necessary catalyst for the unit. Moreover, there is no evidence to indicate that the Lan-chou plant includes alkylation or reforming process facilities which are considered essential to the manufacture of high-grade aviation gasoline -- for example, grade 100/130, similar to the type now used by the Chinese Communist aircraft.

Tetraethyl lead (TEL), an additive for improving antiknock characteristics of both aviation and motor gasoline, is considered essential in producing aviation gasoline, although it is used only in minute quantities. There is no evidence that facilities to produce TEL exist in China.

2. Jet Aircraft Fuel

The USSR now supplies Communist China with a grade T-1 kerosine-type jet fuel* (for use in civil and military aircraft) that corresponds generally to US grade JP-1. China's total production of crude oil is composed of natural crude oil and crude shale oil. Only the kerosine distillate from the refining of natural crude oil is considered suitable for further processing into jet fuel. Information on crude shale oil in China suggests that although the kerosine derived from this raw material is used for household and industrial uses -- where quality is not a primary consideration -- it would not be suitable for processing into jet fuel.

The distillate from natural crude oil provided about 500,000 mt (about 80 percent) of the total kerosine produced in China in 1962. If this distillate were processed to produce jet fuel rather than kerosine, it is believed that only about 400,000 mt of product which would meet the boiling characteristics of Soviet standard jet fuel could be recovered. This latter quantity would be reduced further in the process of meeting essential characteristics of jet fuel other than boiling range, such as viscosity at low temperatures, freezing point, sulfur content, and the like. Thus, on the basis of the quantity and composition of the crude oil produced in 1962, the total jet fuel that could have been produced would have been some indeterminate quantity less than 400,000 mt and, therefore, less than the total quantity (450,000 mt) of jet fuel imported in 1962. Any attempt to produce jet fuel, of course, would result in a corresponding reduction in the amount of kerosine that would be available.**

* China also has received shipments of grade TS-1 jet fuel that may be used interchangeably with grade T-1. The grade TS-1 jet fuel has the same general quality as grade T-1 except for a slightly greater permissible sulfur content.

** Although, in practice, processing losses in the manufacture of jet fuel might cause a slightly greater reduction, production of a unit of jet fuel for the purpose of this estimate is assumed to result in the loss of a unit of kerosine.

There is very little information available that describes in any detail the quality characteristics of kerosine produced in China. However, on the basis of these few reports on the poor quality of the kerosine supplied to consumers, it is estimated that the kerosine normally available in China would not be suitable for use as fuel for jet aircraft. Any decision to use such kerosine as jet fuel would involve some risk to the equipment and probable reduction in aircraft performance.

In addition to grade T-1 jet fuel the USSR has a gasoline/kerosine blend of jet fuel designated as T-2, which corresponds essentially to US grade JP-4. Soviet grade T-2 has never been identified either as having been supplied to or used in Communist China. The technical problems in producing this blended jet fuel would be no more difficult than those in producing the kerosine type of fuel. Production of the blended fuel, of course, would result in a corresponding reduction in output of gasoline and kerosine.

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Table

Communist China: Estimated Supply of Petroleum Products
1962

Product	Total Supply (Thousand Metric Tons)	Imports		Domestic Production	
		Thousand Metric Tons	Percent of Total Supply	Thousand Metric Tons	Percent of Total Supply
Aviation gasoline	60	60	100	Negl.	Negl.
Jet fuel	450	450	100	Negl.	Negl.
Motor gasoline	1,300	320	25	980	75
Kerosine	1,140	500	44	640	56
Diesel fuel	1,230	300	24	930	76
Lubricants	400	230	58	170	42
Residuals	1,600	Negl.	Negl.	1,600	100
Total	6,180	1,860	30	4,320	70

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